TASK ORDER (TO)

47QFCA-18-F-0009

Central Data Exchange (CDX)

in support of:

United States Environmental Protection Agency (EPA)

Issued to:
CGI Federal Inc.
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Fairfax, VA 22033

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C.1 BACKGROUND

The Office of Environmental Information (OEI), headed by the Chief Information Officer, manages the lifecycle of information, supporting the Environmental Protection Agency's (EPA) goal of protecting human health and the environment. The OEI Office of Information Management (OIM) collects, manages, provides, and safeguards environmental information.

The Central Data Exchange (CDX) program has many stakeholders. Listed below are descriptions of some of the various stakeholders with whom the contractor interacts:

a. EPA Program Offices and EPA Regional Offices - Develop environmental rules that require submission of environmental data to EPA, provide business and technical requirements for submission and management of environmental data, and fund data exchange projects. These are the traditional CDX customers.
b. State, Local and Tribal Partners - Typically wish to develop a presence on the Environmental Information Exchange Network (EN). Most state, local, and tribal partners receive grant money from EPA to help fund projects for the EN.
c. Other Federal and International Agencies – Exchange relevant information with other Federal agencies in the United States as well as agencies in other countries.
d. CDX Users - Environmental rules developed by EPA Program Offices require CDX users to submit environmental data to EPA. CDX users do not typically fund CDX services.
e. Information Exchange Solutions Branch (IESB) Team Members - A EPA CDX Technical Point of Contact (TPOC) and supporting subject matter experts will work directly with contractor to develop, deliver, and maintain CDX services.

C.1.1 PURPOSE

The EPA requires technical support including development, Operations and Maintenance (O&M), and special projects for the CDX, and its stakeholders. CDX is the central system through which environmental data is received from the regulated community and processed for delivery to program offices in the agency, as well as other stakeholders. CDX also serves as the point of presence on the National Environmental Information EN where state and tribes routinely conduct data transactions with EPA. Additionally, CDX is an integral component of the E-Enterprise Portal, which provides a consolidated entry point for businesses and citizens to interact with relevant EPA, state, and tribal entities.

C.1.2 AGENCY MISSION

The EPA is charged with protecting human health and the environment. Since 1970, EPA has been working for a cleaner, healthier environment for the American people.

EPA employs approximately 15,000 individuals across the country, including at its headquarter offices in Washington, D.C., ten regional offices, and more than a dozen labs. EPA staff is highly educated and technically trained; more than half of the staff are engineers, scientists, and policy analysts. In addition, a large number of employees are legal, public affairs, financial, information management, and computer specialists. EPA is led by the Administrator, who is appointed by the President of the United States (U.S.). The EPA's primary work includes:

a. Protect human health and the environment through a combination of environmental monitoring, scientific research, programs and partnerships.
b. Develop and enforce regulations: EPA works to develop and enforce regulations that implement environmental laws enacted by Congress. EPA is responsible for researching and setting national standards for a variety of environmental programs, and delegates to states and tribes the responsibility for issuing permits and for monitoring and enforcing compliance. Where national standards are not met, EPA can issue sanctions and take other steps to assist the states and tribes in reaching the desired levels of environmental quality.
c. Offer financial assistance: In recent years, between 40 and 50 percent of EPA's enacted budgets have provided direct support through grants to state environmental programs. These EPA grants to states, non-profits, and educational institutions help EPA achieve its goals by supporting high-quality research that improves the scientific basis for decisions on national environmental issues.
d. Perform environmental research: At laboratories located throughout the nation, the agency works to assess environmental conditions and identify, understand, and solve current and future environmental problems; integrate the work of scientific partners such as nations, private sector organizations, academia, and other agencies; and provide leadership to address emerging environmental issues and advance the science and technology of risk assessment and risk management.
e. Sponsor voluntary partnerships and programs: The agency works through its headquarters and regional offices with over 10,000 industries, businesses, non-profit organizations, and state and local governments on over 40 voluntary pollution prevention programs and energy conservation efforts. Partners set voluntary pollution-management goals; examples include conserving water and energy, minimizing greenhouse gases, slashing toxic emissions, re-using solid waste, controlling indoor air pollution, and garnering a higher level of understanding of pesticide risks. In return, EPA provides incentives like vital public recognition and access to emerging information.

EPA established the CDX in 1999, responding to increasing demand for electronic reporting and data exchange among trading partners and the regulated community. The branch that manages the CDX Program for EPA is the IESB which is within EPA's OIM. Listed below are IESB's mission, and CDX program initiatives.

More information about EPA's mission and strategy can be found at www.epa.gov.

C.1.2.1 IESB MISSION

The IESB supports protection of human health and the environment by leading the agency in electronic data exchange. It provides EPA programs, states, tribes, and industry with CDX data exchange options that meet their business needs. It creates CDX solutions and implements a Service Oriented Architecture (SOA) in alignment with the agency's architecture.

C.1.2.2 CDX PROGRAM INITITATIVES

CDX is currently supporting the flow of data for more than 100 programs. OIM is in the process of expanding CDX, the EN, and the E-Enterprise Portal to support data exchanges and use of shared services with more state environmental agency programs, other Federal agencies, and

international organizations. OIM also seeks to provide the infrastructure and expertise for assisting more EPA and state programs in leveraging the efficiencies of agency-wide technology and services. CDX has begun to host other EPA systems in its hybrid cloud environment, including the Toxics Release Inventory – Made Easy Web (TRI-MEweb) and partner nodes, among others.

C.1.2.3 CDX PROGRAM AS A SOLUTIONS AND SERVICES PROVIDER

From a business operations perspective, the CDX Program has matured to a point where business processes and procedures have evolved to become more efficient and effective. The CDX Program works with stakeholders to determine how to best meet their needs by utilizing and developing services that can be reused across the agency. At the center of this evolution is a focus on improving streamlined development and operational excellence.

The CDX Program is the primary data exchange solution and services provider to the EPA and other CDX Program stakeholders. CDX has a number of core services (see C.5.5 and C.5.6) that can be used and reused for reporting and exchanging environmental information. The structure of this TO is meant to facilitate successful management and delivery of CDX services and solutions to CDX customers.

The number of CDX services, customers, exchanges, and systems supported are continually evolving. This support contract includes approximately 35 CDX core services, 174 data exchanges, and a dozen stakeholder systems and applications. Please refer to the Draft CDX Service Catalog (Section J, Attachment T), Draft CDX Service Matrix (Section J, Attachment V), Draft CDX Service Matrix Service Descriptions, and Support Contract Profile (Section J, Attachment U) for additional information on CDX's core services and data exchanges. Also available with signed NDA: EPA CDX O&M Guide Example (Section J, Attachment, AN),EPA CDX Topography Diagrams (Section J, Attachment AO), EPA CDX Rack Diagram (Section J, Attachment AP, the EPA CDX Operations Support Matrix (Section J, Attachment AQ), and the Reporting Center Dedicated Hardware and Licenses (Section J, Attachment AR).

C.1.2.4 CDX DEVELOPMENT SERVICES DESCRIPTION

CDX provides a variety of Information Technology (IT), data, project, and financial management services to stakeholders. The CDX Program creates data exchanges (also commonly referred to as data flows), each comprised of one or more CDX services. Program offices work with OEI and the contractor through FEDSIM to define specific data exchange requirements and to develop and maintain those exchanges. OEI and FEDSIM work with the program office to identify and document the activities, deliverables, and acceptance criteria in developing a data exchange. OEI's expectation is that new data exchange projects integrate and utilize existing CDX core services and software components, leveraging service-oriented architecture consistent with the EPA's enterprise architecture.

Many data exchanges rely on interconnectivity among a trading partner external to EPA (state, tribe, or local agency), a regulated entity, EPA's CDX, and a program application/database located in EPA's National Computer Center (NCC). Coordination is performed through Application Deployment Checklist (ADC) procedures. Some CDX customers may have application/databases hosted within the CDX test and production environments.

CDX services align with the business needs and actively support their ongoing and changing activities. This service management approach includes: Service Strategy, Service Design, Service Operations, and Service Continual Improvement. Each of these service areas are supported by a governance or management group using a variety of standard IT frameworks.

C.1.2.5 CROSS MEDIA ELECTRONIC REPORTING RULE (CROMERR)

The Cross-Media Electronic Reporting Rule (CROMERR) provides the legal framework for Electronic Reporting (ER) under all of the EPA environmental regulations. CROMERR applies to: (a) regulated entities that submit reports and other documents to EPA under Title 40 of the Code of Federal Regulations (CFR), and (b) states, tribes, and local governments that are authorized to administer EPA programs under Title 40. CROMERR§3.2000(b) sets standards for electronic report receiving systems operated by states, tribes, and local governments under their authorized programs. These standards cover a variety of business processes and technology neutral functions necessary for priority and non-priority electronic reporting such as, but not limited to, identity proofing and nonrepudiation for electronic signatures. The standards are designed to provide electronic submittals with the same level of legal dependability as the corresponding paper submittals.

For reports submitted electronically to EPA, CROMERR requires the reports be submitted through the CDX, or to a system designated by the Administrator for the receipt of those reports. To receive electronic reports systems other than CDX must be re-designated by the EPA Administrator. Although CROMERR does not subject EPA systems to these regulatory standards, EPA must comply with all Federal laws and has decided that all of its systems will conform to CROMERR standards when they operate to receive electronic submittals that are covered by the regulation. In the preamble to the regulation, EPA commits to meeting the §3.2000(b) standards for its own electronic report receiving systems. CROMERR also requires that states, tribes, and local governments that wish to continue or begin using ER for their authorized programs must revise or modify those programs to incorporate ER. CROMERR details the process to obtain EPA approval of ER-related revisions or modifications to an authorized program. See https://www.epa.gov/cromerr

C.2 SCOPE

The scope of work under this TO will support protection of human health and the environment by providing the agency with electronic data exchange services and solutions that enable it to execute its mission. As part of this TO, the contractor shall provide technical support including development, O&M, and special projects for the CDX and its stakeholders. The contractor shall create and maintain support services for internal and external customers that are comparable to the best in the business, while assisting EPA Programs by facilitating compliance with Federal technical and policy requirements.

The place of performance for projects, including Confidential Business Information (CBI) work and the Data Processing Center (DPC) work, will be Washington, DC, the contractor site or remotely; this will be determined by the requirements and where it represents most advantageous conditions for the TO performance. It is anticipated that long-distance travel in the Continental United States (CONUS) will be required to perform some tasks.

C.3 CURRENT INFORMATION TECHNOLOGY (IT)/NETWORK ENVIRONMENT

Specific details regarding the different environments are described within the individual tasks as well as in Section J, Attachments S, V, W, X, Y, and Z.

C.4 OBJECTIVE

The objective of this TO is to provide EPA with CDX services that will improve customer service and increase efficiency by:

a. Supporting CDX stakeholder requirements for additional IT services, such as data and application hosting in the various CDX client environments.
b. Providing technical, financial, and project management expertise to assist exchange partners in developing data exchanges.
c. Working in collaboration with stakeholders on a consultative basis to support the development and maintenance of data exchanges that meet EPA and Federal policies, standards, and regulations.
d. Providing expertise to stakeholders to assist in data exchange design, use of services, and optimizing infrastructure to fit their needs where appropriate.
e. Serving as a focal point in the agency for web and cloud-based services and SOA activities.
f. Keeping current on Federal requirements and guidelines for project management, security, and investments.
g. Implementing and maintaining security standards, investment, and contractual requirements as specified by Federal, EPA, and program requirements.
h. Developing and supporting options for exchange partner registration and authentication alternatives to meet program and regulatory requirements.
i. Providing and implementing options to retain compliance with CROMERR for all applicable partners.
j. Supporting the development, operations, and maintenance of registry services in the System of Registries (SOR) (www.epa.gov/sor). The registries are centrally managed catalogs for EPA and its partner organizations (e.g., states, tribes), that register information ranging from facilities for which EPA and its partners have environmental information to the substances that are tracked or regulated.

C.5 TASKS

C.5.1 TASK 1 – OPERATIONS AND MAINTENANCE (O&M) MANAGEMENT

CDX O&M involves significant service coordination, planning, and documentation across Tasks and Subtasks. Operations management shall ensure that service requirements are identified and support the following management activities:

a. Draft CDX Service Catalog (Section J, Attachment T) and Application Management Portfolio (AMP) (Section J, Attachment AF) shall define applicable O&M services or applications and support procedures for use in development lifecycle and development tasks.
b. Training and service implementation schedules shall track activities and dependencies for test and production services. High level schedules and training events will be promoted to Change Control as necessary.
c. Availability monitoring, resource utilization, installation support and provisioning naming standards shall be coordinated in advance of Agile DevOps support.
d. The contractor shall provide Detailed Project Estimates (Section J, Attachment AG) in response to individual project requirements provided by the Government for Tasks 2 through 6. The FEDSIM CO submits project requirements to the contractor and the contractor shall then return a Detailed Project Estimate broken down by activity, timeframe, and cost, reporting any recommended variances, risks, and assumptions from the original request.

C.5.2 TASK 2 – PROVIDE PROGRAM MANAGEMENT

The contractor shall provide Program Management under this TO. This includes the management and oversight of all activities performed by contractor personnel, including subcontractors, to satisfy the requirements identified herein. The contractor shall identify and coordinate projects to ensure consistency of progress towards accomplishing the project goals. The contractor shall identify a Program Manager (PM) by name that shall provide management, direction, administration, quality assurance (QA), and leadership of the execution of this TO. The PM shall be responsible for assigning Task Leads who shall provide project management and leadership for each of the various customer projects.

The contractor shall facilitate Government and contractor communications and all activities necessary to ensure the accomplishment of timely and effective support, performed in accordance with the requirements contained in this TO.

The contractor shall notify the FEDSIM CO, FEDSIM Contracting Officer's Representative (COR), and EPA CDX TPOC in writing of any technical, financial, personnel, or general managerial problems encountered throughout the TO's PoP.

C.5.2.1 SUBTASK 1 – COORDINATE A PROJECT KICK-OFF MEETING

The contractor shall schedule, coordinate, and host a Project Kick-Off Meeting (**Section F.3, Deliverable 02**) at the location approved by the Government. The meeting will provide an introduction between the contractor personnel and Government personnel who will be involved with the TO. The meeting will provide the opportunity to discuss technical, management, and security issues, and travel authorization and reporting procedures. A Travel Authorization

Request (TAR) Template (Section J, Attachment K) shall be used for all contractor long distance travel. At a minimum, the attendees shall include Key Contractor Personnel, representatives from the Directorates, the FEDSIM CO and COR, the EPA CDX TPOC, and other relevant Government personnel. At least three days prior to the Kick-Off Meeting, the contractor shall provide a Kick-Off Meeting Agenda **(Section F.3, Deliverable 01)** for review and approval by the FEDSIM COR and the EPA CDX TPOC prior to finalizing. The agenda shall include, at a minimum, the following topics/deliverables:

a. Introduction of team members and personnel.
    1. Roles and responsibilities, including staffing plan and project organization.
    2. Overview of the contractor organization to support varying locations of work.
b. Communication Plan/lines of communication overview (between the contractor and Government).
c. Approach to reaching proposed staffing levels to allow for operational support for time constraint occurrences identified in Section C.5.2.9, Subtask 9 – Implement Transition-In.
d. Program Management.
    1. Overview/outline of the Project Management Plan (PMP).
    2. Overview of project tasks and performance metrics.
    3. Overview of the contractor's Updated Quality Control Plan (QCP) **(Section F.3, Deliverable 11)**.
    4. TO logistics.
e. Program Administration.
    1. Review of Government-Furnished Information (GFI) and Government-Furnished Property (GFP) processes.
    2. Invoice review and submission procedures.
    3. Travel notification and processes.
    4. Security requirements/issues/facility/network access procedures.
    5. Sensitivity and protection of information.
    6. Reporting requirements (e.g., Monthly Status Report (MSR)).
f. Additional administrative items (back-up support).

The Government will provide the contractor with the number of Government participants for the Kick-Off Meeting and the contractor shall provide sufficient copies of the presentation for all present. The contractor shall prepare a Meeting Report, documenting the Kick-Off Meeting Discussion and capturing any action items (**Section F.3, Deliverable 10**). The contractor shall coordinate and host a follow on to the kick-off meeting specific to discuss the details of the invoice procedures and requirements. All invoice procedures and requirements are defined by the Government.

C.5.2.2 SUBTASK 2 – PREPARE A MONTHLY STATUS REPORT (MSR)

The contractor shall develop and provide an MSR (**Section F.3, Deliverable 03**). The MSR shall include the following by project and subproject:

a. Activities during reporting period, by project and subproject (include on-going activities, new activities, activities completed, and progress to date on all above mentioned activities). Start each section with a brief description of the task.
b. Problems and corrective actions taken. Also include issues or concerns and proposed resolutions to address them.
c. Personnel gains, losses, and status (leave, security clearance, etc.).
d. Government actions required.
e. Schedule (shows major tasks, milestones, and deliverables; planned and actual start and completion dates for each).
f. Accumulated invoiced cost for each CLIN and by project and subproject up to the previous month.
g. Actual and projected cost and hours by labor category of each CLIN for the current PoP.
h. Financial expenditure status/burn rates by project and subproject. The contractor shall highlight projects and subprojects that have incurred 75 percent of funding. In addition an estimate of when the project and subproject will deplete funding based on an accrual basis.
i. Status of all deliverables

The MSR shall be prepared in accordance with the sample provided (Section J, Attachment E).

PLEASE NOTE: All invoices and monthly status reports should be produced on a calendar month basis (e.g., January 1-January 31).

C.5.2.3 SUBTASK 3 – CONVENE MONTHLY TECHNICAL STATUS MEETINGS

The contractor PM shall convene a Monthly Technical Status Meeting (**Section F.3, Deliverable 04**) with the EPA CDX TPOC, FEDSIM COR, and other Government stakeholders. The purpose of this meeting is to ensure all stakeholders are informed of the monthly activities and the MSR, provide opportunities to identify other activities and establish priorities, and coordinate resolution of identified problems or opportunities. The contractor PM shall provide Monthly Technical Status Meeting Minutes (**Section F.3, Deliverable 05**) of these meetings, including attendance, issues discussed, decisions made, and action items assigned, to the FEDSIM COR within five days following the meeting. On a case-by-case basis, the contractor may be required to provide minutes within 24 hours after the conclusion of the meeting.

C.5.2.4 SUBTASK 4 – PREPARE A PROJECT MANAGEMENT PLAN (PMP)

The contractor shall document all support requirements in a PMP - Draft (**Section F.3, Deliverable 06)** and PMP – Final **(Section F.3, Deliverable 07)**.

At a minimum, the PMP shall contain the following:

a. An overview of the project organization with roles and responsibilities.
b. An overview of the contractor organizational structure with roles and responsibilities.
c. A Staffing Plan to include a matrix of all personnel assigned to the program and total aggregate LOE for all tasks.
d. Updated Standard Operating Procedures (SOPs) **(Section F.3, Deliverable 23)** for all tasks.

e. Milestones, tasks, and subtasks required in this TO.
f. An overall Work Breakdown Structure (WBS) and associated responsibilities and partnerships between Government organizations.
g. A spend plan, which shall include estimates of planned expenditures by calendar month.

C.5.2.5 SUBTASK 5 – PROJECT MANAGEMENT PLAN (PMP) UPDATES

The PMP is an evolutionary document that shall be updated annually at a minimum (**Section F.3, Deliverable 08**). The contractor shall work from the latest Government-approved version of the PMP. The contractor shall keep the PMP electronically accessible to the Government at all times.

C.5.2.6 SUBTASK 6 - PREPARE TRIP REPORTS

The Government will identify the need for a Trip Report when the request for travel is submitted (**Section F.3, Deliverable 09**). The contractor shall keep a summary of all long-distance travel including, but not limited to, the name of the employee, location of travel, duration of trip, and Point of Contact (POC) at travel location. Trip reports shall also contain Government approval authority, total cost of the trip, a detailed description of the purpose of the trip, and any knowledge gained. At a minimum, trip reports will be prepared with the information provided in Section J, Attachment F.

C.5.2.7 SUBTASK 7 – PREPARE MEETING REPORTS

The contractor shall prepare and submit Meeting Reports (**Section F.3, Deliverable 10**) as requested by the EPA CDX TPOC and/or FEDSIM COR, to document results of meetings. Historically, there have been 15-20 personnel who attend technical interchange meetings. The Meeting Report shall include the following information:

a. Meeting attendees and their contact information – at a minimum, identify organizations represented
b. Meeting dates
c. Meeting location
d. Meeting agenda
e. Purpose of meeting
f. Summary of events (issues discussed, decisions made, and action items assigned)

C.5.2.8 SUBTASK 8 – QUALITY CONTROL PLAN (QCP)

The contractor shall prepare a QCP (**Section F.3, Deliverables 12**) as part of the PMP. The QCP shall identify the contractor's approach to ensure quality control in meeting the requirements for each task identified in the TO (i.e., not a generic corporate quality control process). The contractor shall describe its QA and quality control methodology for determining and meeting performance measures identified.

The QCP shall contain at a minimum the following:

a. Performance measure and monitoring methods.
b. Approach to ensure that cost, performance, and schedule comply with task planning.
c. Methodology for continuous improvement of processes and procedures.

d. Government and contractor roles and responsibilities.

The contractor shall periodically update the QCP (**Section F.3, Deliverable 13**) at a minimum annually and as changes in program processes are identified. The Government's Quality Assurance Surveillance Plan (QASP) is located in Section J, Attachment AA.

C.5.2.9 SUBTASK 9 –TRANSITION-IN

The contractor shall complete all transition-in activities NLT 60 calendar days after the TOA date. The contractor shall update the proposed Draft Transition-In Plan (**Section F.3, Deliverable 14**) submitted with the contractor's proposal, as appropriate, and provide a Final Transition-In Plan (**Section F.3, Deliverable 15**) within five days after the Project Kick-Off Meeting. The contractor shall ensure that there will be minimum service disruption to vital Government business and no service degradation during and after transition.

During the 60 calendar day transition-in period:

a. The contractor shall prepare to meet all TO requirements and ensure all incoming personnel are trained and qualified to perform.
b. The contractor's personnel shall interface with Government personnel and other contractor personnel for purposes of transferring knowledge, lessons learned, and continuity of information and documents for the commencement of performance.
c. The contractor shall provide additional augmented support in response to identified crisis action matters with the urgency the matter entails.

All GFP will be accessible to contractor personnel during the transition-in period. The contractor shall implement its Transition-In Plan when the Government accepts the Transition-In Plan as final (**Section F.3, Deliverable 15**).

C.5.2.10 SUBTASK 10 – TRANSITION-OUT

The contractor shall provide Transition-Out support when required by the Government. The Transition-Out Plan shall facilitate the accomplishment of a seamless transition from the incumbent to an incoming contractor/Government personnel at the expiration of the TO. The contractor shall provide a draft Transition-Out Plan (**Section F.3, Deliverable 16**) within six months of Project Start (PS). The Government will work with the contractor to finalize the Transition-Out Plan (**Section F.3, Deliverable 17**) in accordance with Section E. At a minimum, this Plan shall be reviewed and updated on an annual basis (**Section F.3, Deliverable 18**). Additionally, the Transition-Out Plan shall be reviewed and updated quarterly during the final Option Period 4 (**Section F.3, Deliverable 18**).

In the Transition-Out Plan, the contractor must identify how it will coordinate with the incoming contractor and/or Government personnel to transfer knowledge regarding the following:

a. Project management processes
b. Points of contact
c. Location of technical and project management documentation
d. Status of ongoing technical initiatives
e. Appropriate contractor to contractor coordination to ensure a seamless transition
f. Transition of Key Personnel

g. Schedules and milestones
h. IT Enterprise Service Desk data, including metrics and statistics
i. Physical transfer of any GFI and GFE, and GFE inventory management assistance
j. Transfer of any compiled and un-compiled source code, to include all versions, maintenance updates and patches (if applicable)

Transfer of any hardware/software licenses and warranties (if applicable). The contractor shall also establish and maintain effective communication with the incoming contractor/Government personnel for the period of the transition via weekly status meetings or as often as necessary to ensure a seamless transition-out.

The contractor shall analyze documentation for existing data exchanges and provide a Gap Analysis Report (**Section F.3, Deliverable 20**). The report shall make recommendations for which data exchanges require documentation to be created to ensure a successful transition. Once the Gap Analysis Report is accepted by EPA, the contractor shall create documentation for the requested data exchanges and include such documentation as system design documents.

The contractor shall implement its Transition-Out Plan NLT six months prior to expiration of the TO.

C.5.2.11 SUBTASK 11 – ENHANCED FINANCIAL REPORTING SUPPORT

Enhanced financial reporting is defined as reporting that is above the standard reports provided to customers by the CDX Program. The CDX Program offers enhanced financial reporting to customers on a weekly basis for each project. The enhanced reports are custom for each customer and will vary. Examples of enhanced financial reporting typically requested by customers include:

a. Traditional or modified Earned Value Management (EVM) Metrics and Calculations support (optional service)
b. Weekly Financial Reporting. The contractor shall notify the FEDSIM COR and EPA CDX TPOC when costs incurred are at 75 percent of funding.
c. Return on Investment Reports.
d. Data calls for Capital Planning and Investment Control input.
e. Data calls for OMB Reports.

As requested by EPA, the contractor shall provide enhanced financial reporting services. Reporting services provided to EPA will depend on CDX customer financial reporting requirements.

C.5.3 TASK 3 –CDX IT O&M AND SUPPORT

The contractor shall be responsible for overall O&M of the CDX environments, public and private, for development, integration tests, pre-production, and production. The contractor shall also provide partial O&M support for research and development environments in accordance with agency and Federal Information Processing Standards (FIPS). The following subtasks provide additional information about this task:

C.5.3.1 SUBTASK 1 – INFRASTRUCTURE AND PLATFORM SERVICES

The contractor shall provide the following infrastructure and platform support:

a. Maintain CDX O&M procedures in accordance with all technical and security procedures, and support CDX Contingency Plans, event monitoring, and metrics for event response as incidents.
b. Draft CDX System Security Controls (**Section F.3, Deliverable 37**), as requested, and coordinate final language and support with System Security.
c. Implement hardware, software, and telecommunications according to approved release management schedules, Sprint plans, and Waterfall or Spiral milestones based on development lifecycle methodologies, with major milestones for architecture changes and major upgrades tracked in project plans for significant activities. Changes to CDX architecture shall be coordinated through the CDX Engineering Board (EB).
d. Manage Anti-Virus scanning and PatchLink Operating System updates in coordination with EPA's NCC schedules and promotion schedules in accordance with Security Planning Controls as specified by Federal Information Security Management Act (FISMA). Additionally, they must meet additional United States Computer Emergency Readiness Team (US-CERT) and Department of Homeland Security (DHS) requirements through a Plan of Action and Milestones (POA&M).
e. Establish and comply with CDX O&M Guide Procedures (**Section F.3, Deliverable 39**), as requested, and Standard Configuration Checklist Documentation (**Section F.3, Deliverable 38), as requested,** for all infrastructure and major platform software.
f. Maintain and test CDX O&M procedural documentation event monitors, resource logs, and extracts as required according to all laws, regulations, and agency policies.
g. System performance monitoring shall follow CDX O&M procedures and exception events/incidents shall be escalated.
h. Tier 3 Help Desk incident responses and operational support will be documented through operational framework agreements and procedures, as well as automated processes through email or other protocols and technologies to support escalation of help desk incident information between Tier 3 support and other external Tier 1 and Tier 2 Help Desks. (Tier 1 and Tier 2 Help Desk Support are provided by a separate contractor under a different contract vehicle) Current examples of Tier 3 support include, but are not limited to, application errors, code changes, data correction requests, node registration/access issues, security-related support, consulting, and system administration.
i. System contingency planning shall be documented and routinely tested annually and when significant architecture changes occur. The plan and test results shall be documented according to the CDX Contingency Plan and FIPS.
j. Continual service and service resource monitoring shall be documented and performed to collect event/incident metrics, including Infrastructure as a Service (IaaS), Platform as a Service (PaaS), Software as a Service (SaaS), and Identity as a Service (IDaaS), as well as other data for allocation of costs to stakeholders.
k. Change control configuration management shall be performed according to the CDX Configuration Management Plan (**Section F.3, Deliverable 24**) and maintained as

necessary to reflect an Information Technology Infrastructure Library (ITIL) framework that supports multiple methodologies.

l. Database administration shall be performed to ensure the support for CDX services for programs and all operational environment databases with documentation maintained in the CDX O&M Guide.

m. Regular coordination meetings shall be held between the contractor and operational data centers including the NCC Networking and Operations to ensure all environments are integrated and maintained in a timely and consistent manner.

n. CDX application O&M and infrastructure O&M support shall be performed through separation of duties similar to, or as described in, Separation of Duties Guide, (Section J, Attachment AH).

o. The contractor shall provide systems performance monitoring and reporting services for CDX customers. This applies specifically to customers who desire performance reporting that is above the reporting that is normally provided as a part of the standard CDX O&M support.

p. Remote administration functions shall be limited to devices with standard configurations meeting FIPS and two-factor authentication that incorporates federally managed Personal Identity Verification (PIV) cards and other technologies.

q. EPA-provided virtual desktop infrastructure and GFE shall be properly maintained to support remote access to all environments consistent with Security Plan Access Controls (Information Security-Access Control Procedure: https://www.epa.gov/impoli8).

C.5.3.2 SUBTASK 2 – CONFIGURATION, CHANGE, AND RELEASE MANAGEMENT

CDX O&M development methodologies use an ITIL framework. Procedures include event management, incident management, and version control for change control and release management. The procedures are governed by a Change Control Board (CCB). Certain projects will require use of Agile tools to support collaboration and DevOps automation for Sprints.

The CDX Program is currently integrating Microsoft Azure private and public cloud technologies, and integrating cloud computing concepts and strategies into the CDX Program to gain operational efficiencies, reduce costs, and increase agility. The contractor shall provide the following O&M support:

a. The contractor shall integrate National Institute of Standards and Technology (NIST) 800-145 cloud computing concepts and strategies and manage all environmental configurations to support the CDX Program, the various CDX system environments, and the related systems and applications.

b. The contractor shall integrate IT service management best practices, including DevOps lifecycle management, into its task management approach with the goal of improving CDX Program service quality, increasing strategic collaboration among CDX teams, and increasing operational efficiencies.

c. The contractor shall support reporting by exchange or flow and other monitoring factors identified by customer.

d. The Configuration Management Plan will be continually maintained documenting change control, configuration management, release management, and emergency change procedures. New DevOps procedures for development support will be integrated into the Configuration Management Guide (Section J, Attachment AJ) as required.
e. EPA-provided virtual desktop infrastructure and GFP shall be properly maintained to support remote access to all environments consistent with Security Plan Access Controls.
f. Promotion Request Forms (PRFs) (Section J, Attachment AK), Emergency Change Requests (Section J, Attachment AL), and Third Party Release Checklists (Section J, Attachment AM) shall be used as described in the Configuration Management Plan.

C.5.3.3 SUBTASK 3 –O&M INCIDENT MONITORING AND MANAGEMENT SUPPORT

CDX is a mission-critical application that must monitor critical Commercial Off-the-Shelf (COTS) and application services, and procure and maintain vendor-supported equipment and licenses for mission-critical functions. To ensure continuity of support, specific timeliness requirements are tracked and agreed on that allow EPA sufficient time to review and approve necessary procurements and support renewals as well as to allow the contractor O&M support teams clear expectations on response times for detected outages to specific equipment and monitored services, which are continually maintained.

The contractor shall provide the following O&M service level support:

a. Notify EPA within 60 calendar days before the expiration of software/hardware licenses (Section J, Attachment AI). All RIP purchases will follow a detailed process that validates with EPA enterprise to ensure compliance. That detailed work process on the license purchases shall be established post-award.
b. Notify EPA OEI of downtime events or outages that impact OEI, stakeholders, or end users within one hour for production environments, by 10:00 A.M. the next business day for test systems and applications.
c. Notify affected stakeholders directly if directed by the EPA.

C.5.3.4 SUBTASK 4 – NODE SERVICE MANAGEMENT

The CDX and the EN are built on an SOA. Messaging services are hosted on exchange platforms called nodes which are deployed across the country at the EPA partners' sites. Several vendors and the EPA have developed node implementations on multiple platforms which have been re-used by partner and program offices for their nodes. CDX currently uses .NET, JAVA, and SQLDATA-based nodes for our services. There are nodes located throughout the states, tribes, and EPA. In addition, EPA has developed a cloud-based, multi-tenant node called the Virtual Exchange Services (VES) as the new standard for the EN. VES is in the Microsoft Azure public cloud. It is a low-cost alternative to physical partner node servers and it is used by about 15 of the partner nodes at this point. Use of VES is growing and the number of partner nodes is continually expanding. Our nodes host security and other key services that are critical to the functioning of the EN and E-Enterprise and must be monitored closely to ensure their availability.

Platform independent nodes based on the EN protocol and functional specifications are the primary messaging/exchange technologies used in the CDX/EN. Most nodes support both

Simple Object Access Protocol (SOAP) and Representational State Transfer (REST) web services and are used for all of the shared services. There are hundreds of nodes deployed across the EN and within CDX. They have been deployed in the cloud, in states, tribes, industry, program offices, other agencies, and other countries.. Data exchanges on a node are the implementation of a specific data schema for sharing information between two partners such as the Water Quality Exchange (WQX). The term dataflow is used to describe the dozens of specific data exchanges in CDX/EN.

The Exchange Network Discovery Services (ENDS) is a set of web services that are compliant with the EN protocol and functional specification that support the discovery of services and related metadata. They are used in the automation of user friendly query builders that simplify access to the services. Some of the primary metadata types include node, service request, parameters, style sheets, and costing information. Metadata is collected nightly directly from the network nodes and loaded into ENDS automatically via the GetServices query in the Node 2.0 Specification. The ENDS is a network-wide service repository which contains service descriptions for all nodes. The ENDS not only offers a catalog of services, but also provides service management capabilities. All CDX web services will be loaded and maintained in ENDS via the automated ENDS Service collection process each night. These services definitions are in turn pulled into the Agency Registry of Component Service (RCS), a general component registry.

The contractor shall support O&M activities for all CDX nodes and EN data exchanges.

The contractor shall provide the following node O&M support:

a. Deploying new CDX node releases (e.g., server setup and configuration, node setup, unit testing, rolling between development, test, and production environments, and Quality of Service (QOS) monitoring).
b. Supporting multiple versions for nodes (there are two based on the versions of SOAP, versions 1.1 and 2.0).
c. Communicating/releasing new versions of Next Generation Node (NGN) software for CDX and its trading partners. This is a JAVA node used for most state data exchanges in CDX.
d. Providing periodic testing.
e. Identifying and testing interoperability and deploying new versions of supported software to remain current and ensure adequate support.
f. Conduct initial inventory to check for missing service definitions in the ENDS.
g. Maintain nightly synchronization scripts and manage through event/incident management support.
h. EN registration web forms allowing EN node owners to remotely administer credentials, access rights, and passwords to the Network Authentication and Authorization Service (NAAS).

C.5.3.5 SUBTASK 5 – CDX INTERNET/WEB SERVICE MANAGEMENT

CDX provides a multitude of standard application registration services integrated with NAAS and other third-party service providers to support registration workflow procedures for regulated and unregulated users. Based on categorization of information and regulation, the integration of

multiple identity management, credential management, certificate management, electronic sponsorship management, electronic signature device management, and access rights management, services and tools are maintained through web forms and web services.

The key CDX internet/web service components supported by CDX are:

a. CDX Web Open Registration web forms allowing users to identify themselves, request credentials and authorization, and obtain sponsorship forms electronically for applications designated as "Open."
b. CDX Web Pre-Registration allows application owners to identify and pre-populate user identities and credentials, and to authorize access to applications designated as "Open" or "Closed." Users can then validate pre-populated information through Open Registration.
c. CDX Closed Registration allowing application owners to restrict user requests for access openly, and utilize CDX Pre-Registration exclusively for applications designated as "closed."
d. CDX Registration Maintenance providing a web-based, access rights management tool allowing for remote administration of access rights to roll-based applications managed by CDX.
e. CDX EN Integration for identity management and reduced sign on.
f. CDX Digital Certificate Management and Local Registration Authority support for Certificate Authorities.
g. LexisNexis InstantID® Identity Proofing verifying Social Security Number (SSN)/Driver's License and other sensitive Personally Identifiable Information (PII) and maintaining Levels of Assurance (LOA) to meet role-based access requirements specified by function.
h. LexisNexis BusinessInstantID® Identity Proofing verifying SSN/Driver's License and Business Federal Employer Identification Numbers (FEIN) along with other sensitive PII and maintains LOA to meet role-based access requirements specified by any program function.
i. LexisNexis InstantVerify/InstantAccess® Out-of-Wallet identity verification which prompts users for categories of sensitive PII based on historical credit information and maintains LOA to meet role-based access requirements specified by any program function.
j. Factor-based electronic signature cryptography providing IT methodologies to re-verify intent to sign documents and uniquely identify users through multi-factor authentication with signature and message integrity confirmation during signature and afterward. Factors required will be provisioned by program role to support options that include knowledge-based, certificate-based, and device-protocol-based signatures, such as Short Messaging Service Personal Identification Number (SMS PIN) verification, as well as support for methodologies that include biometric forensics.
k. Personal ID verification card authentication and e-signature services relying upon Public Key Infrastructure (PKI) certificates within cards for EPA implementations. These certificates rely on external desktop management outside the scope of this TO.

In addition to CDX registration, additional CDX web services are offered comprised of several well-defined web form and web-service-based services. These services have repeatable lifecycles

and predictable costs for performing standardized IT services commonly used to consistently manage the complexity of help desk administration, user registration, regulated reporting, and copying of record management with minimal additional regulatory review. This suite of services is referred to as CDXNOW and includes:

a. ProvisionNOW to quickly set up role registration based on requirements. ProvisionNOW is the ability to alter registration and services dynamically enabling specific services and components and documents to be rendered from table-driven criteria.
b. SubmitNOW to quickly produce web form submit functions that electronically sign/certify documents.
c. PrepareNOW reusable source code and integrated services to quickly produce web forms similar to SubmitNOW but without electronic signatures, then optionally attach files.
d. ExchangeNOW CDX web service integration with established EN web services to quickly share files between two nodes potentially as add-on services to SubmitNOW.
e. RapidCDX-Standard methodologies for converting web forms into human readable quickly and reliably into document(s) (Portable Document Format (PDF) /Hypertext Markup Language (HTML)/Comma Separated Value (CSV)/Excel (XLS)) typically to support transaction recordkeeping for SubmitNOW services.
f. XML/stylesheets to support standard conversion of forms to XML/stylesheet document(s) to be retained as records.
g. Form Extract (CSV) to convert standard form input to comma separated value format.
h. CDX InBox which is a standard Hypertext Transfer Protocol Secure (https) mail service available to all users of CDX web and advanced shared CROMERR tools.
i. Group InBox which is a shared secure https CDX InBox available as a mailbox on CDX web extranet.
j. VersiformNOW to quickly produce PrepareNOW from VERSIFORM Cloud and optionally attach files or certify forms using standard web services and CROMERR electronic signature options.
k. Remote SubmitNOW for external systems (SOAP Web Services (WS)).
l. ReviewNOW a search, list, and download of submitted files for entire roles.
m. CROMERR Administrator a search, list, and download of submitted files to the CROMERR record repository.
n. Encrypted ReviewNOW with encryption at rest/decryption support.
o. UserNOW with three registration requests.
p. Role Sponsorship which includes role provisioning with one role sponsoring another and optional signature(s).

C.5.3.6 SUBTASK 6 – SHARED CROMERR SERVICE (SCS) MANAGEMENT

All tools are maintained to support EPA states, tribes, and local governments independently of CDX web program services.

a. Advanced SCS Open Registration web forms allowing users to identify themselves, request credentials and authorization, and obtain sponsorship forms electronically for applications designated as “Open.”

b. Advanced SCS Web Pre-Registration allows application owners to identify and pre-populate user identities and credentials, and to authorize access to applications designated as “Open” or “Closed.” Users can then validate pre-populated information through Open Registration.
c. Advanced SCS Closed Registration allowing application owners to restrict user requests for access, openly, and utilize ADVANCED SCS Pre-Registration exclusively for applications designated as “closed.”
d. Advanced SCS Dynamic Registration allow the provisioning a dynamic workflow components enabling owners to specify table-driven criteria necessary to authorize “Open” registration.
e. Advanced SCS Registration Maintenance providing a web-based, access rights management tool allowing for remote administration of access rights to roll-based applications managed by CDX.
f. Advanced SCS EN and E-Enterprise Integration for identity management and reduced sign-on that relies on NAAS Services.
g. Advanced SCS Digital Certificate Management and Local Registration Authority support for certificate authorities.
h. Advanced and Standard Web Services for LexisNexis InstantID® Identity Proofing verifying SSN/Driver’s License and other sensitive PII and maintaining LOA to meet role-based access requirements specified by function.
i. Factor-based Electronic Signature Cryptography providing IT methodologies to re-verify intent to sign documents and uniquely identifying users through multi-factor authentication with signature and message integrity confirmation during signature and afterward. Factors required will be provisioned by the program role to support options that include knowledge-based, certificate-based, and device-protocol-based signatures, such as SMS PIN verification, as well as support for methodologies that include biometric forensics.
j. Additional services as coordinated with EN and Environmental Council of States (ECOS).
k. ProvisionNOW to quickly set up role registration based on requirements. ProvisionNOW is the ability to alter registration and services dynamically enabling specific services and components and documents to be rendered from table-driven criteria.
l. SubmitNOW to quickly produce web form submit functions that electronically sign/certify documents.
m. PrepareNOW reusable source code and integrated services to quickly produce web forms similar to SubmitNOW but without electronic signatures then optionally attach files.
n. ExchangeNOW CDX web service integration with established EN web services to quickly share files between two nodes potentially as add-on services to SubmitNOW.
o. RapidCDX-Standard methodologies for converting web forms into human readable quickly and reliably into document(s) (PDF/HTML/CSV/XLS) typically to support transaction record-keeping for SUBMITNOW services.
p. XML/Stylesheets to support standard conversion of forms to XML/stylesheet document(s) to be retained as records.

q. Form Extract (CSV) to convert standard form input to comma separated value format.
r. Advanced SCS InBox which is a standard https mail service available to all users of CDX web and advanced shared CROMERR tools.
s. Standard CROMERR Services – User categories of SOAP WS methods for UserManagementServices, SignatureDeviceServices, SignatureService, SignatureAndCorService, IdentityProofingService1, IdentityProofingService2, AuthenticationService, Organization Management Services.
t. CROMERR Administrator – A search, list, and download of submitted files to the CROMERR record repository.
u. Role Sponsorship which includes role provisioning with one role sponsoring another and optional signature(s).

C.5.3.7 SUBTASK 7 – DATA/DOCUMENT ARCHIVING AND BACK UP SERVICES

The contractor shall ensure that all data/documents in CDX and the DPC/Reporting Centers (RC) are archived and/or periodically backed up to the Microsoft Azure storage services locally and periodically pushed to the Microsoft Azure commercial cloud storage services to conserve space on the private cloud.

The contractor shall provide the following data/document archiving activities for support:

a. Provide both on-site and off-site storage for data, files, electronic equipment, and supplies, including secure storage for CBI.
b. Provide digital scanning and electronic archiving if requested.
c. Backup DPC/RC-related system data files, and any other operating system, application program, and data files critical to the operations of the centers. Timeframes for backups and procedures will be specified by EPA.
d. Maintain storage on the Microsoft Azure commercial cloud and utilize the storage services in order to maintain the archived monthly backups.
e. Maintain a hard copy log of the contractor's backup activities and securely store this information
f. Maintain a log, preferably in a secure offsite location.

C.5.4 TASK 4 – PROVIDE CDX INFORMATION ASSURANCE AND REGISTRATIONS SERVICES

An independent party completes an assessment of CDX security annually. CDX has Authority to Operate (ATO) under a moderate sensitivity categorization. CDX continually scans and addresses Plans of Action and Milestones (POA&Ms) on a regular schedule. The contractor shall provide the following information assurance and registration support:

a. Ensure the security of the CDX system that includes development, test, and production environments.
b. Be responsible for maintaining security of all CDX-supported systems in accordance with laws, regulations, policies, and procedures.

For new data exchange and/or service requirements, the contractor shall:

a. Assess the impact of a customer's security requirements on the CDX infrastructure. The assessment could include:
   1. Type of data
   2. System sensitivity
   3. System structure
   4. Data transmission

   Per NIST 800-47, Memorandums of Understanding (MOUs) and Interconnection Security Agreements (ISAs) are developed and maintained for external organizations.
b. Remain cognizant of new directions in Federal/EPA security guidance and CDX technologies.
c. Ensure that the detection of new threats and vulnerabilities to CDX are addressed and escalated according to the EPA Security Escalation Procedures and Computer Security Incident Response Capability (CSIRC) procedures (https://www.epa.gov/impli8/procedures-facilitate-incident -response).
d. Keep all security procedure and planning documents that are necessary to maintain the certification and accreditation of the CDX system and development environments current and accurate.
e. Fill out Firewall Rule Change Requests (FRR) and submit them to the EPA.
f. Create and update Security Addendums (SA) to the CDX system security plan, as well as MOUs and ISAs.
g. Update the EPA Xacta system as necessary (i.e., when a security vulnerability is found in CDX, the CDX Program staff creates an entry in the EPA Xacta system and the contractor updates the entry).

   Security includes:
   1. Intrusion detection and protection systems.
   2. Firewalls.
   3. Hardware security.
   4. Router.
   5. Bridge.
   6. Switches.
   7. Cloud infrastructure.
h. Assess design, development, and implementation of new and existing applications for CROMERR, offering recommendations and providing the procedures, software services, and documentation necessary for CDX electronic reporting to be CROMERR-compliant.
i. Support the CDX Program's efforts to implement CROMERR in CDX system components and services for stakeholders.

C.5.4.1 SUBTASK 1 – PROVIDE CROSS MEDIA ELECTRONIC REPORTING RULE (CROMERR) SUPPORT

The contractor shall provide the following CROMERR support as defined in C.1.2.5:

a. Periodically review current CROMERR solutions and investigate whether advances in technology may be utilized to more efficiently meet the provisions of CROMERR.
b. Support customers that have data exchanges which require CROMERR compliance to include assisting CDX customer efforts to complete relevant CROMERR compliance checklists.
c. Maintain and update documentation, including CROMERR checklists and attachments that document the details on the use of CROMERR services as they relate to CDX CROMERR solutions.
d. Maintain and ensure the adherence of all established SOPs including, but not limited to, help desk procedures and maintenance of a copy of record of the submission.

C.5.4.2 SUBTASK 2 – PROVIDE CDX REGISTRATION SUPPORT

The contractor shall provide the following CDX registration support:

a. Maintain standardized CDX registration components and services; provision CDX registration services connected to other CDX services; and provide development, integration, and O&M support consistent with CROMERR, CDX Development Lifecycle, change management, service resource management, and CDX O&M guide procedures. Change management involves changing metadata and maintaining core software. The provisioning process is a configuration item scheduled and approved through change control and performed through online software and/or scripting procedures.
b. Provide technical support, coordination, documentation, record keeping, and management for CDX Registration and EN Registration procedures, as well as provide PKI Local Registration Authority procedures and management for electronic and paper registration materials and records received. These procedures and materials shall be managed consistently with all applicable laws, Federal standards, agency policies, and CROMERR. Where possible, services will be generalized to support reusable components through multiple IT platforms and be designed to be published to open source platforms such as GitHub.

C.5.4.3 SUBTASK 3 – PROVIDE EN QC SERVICES SUPPORT

In addition to the program-level Quality Control Plan (QCP), support will be needed in the area of the EN QC Services. These services are a set of XML web services for validating XML documents against the associated schemas and extended business rules. It consists of two major services:

a. Schema Validator: This service verifies the structure of XML documents using definitions in one or more schema files. Basic content constraints are also checked.
b. Schematron Validator: This is an optional extension of the Schema service that further validates XML documents using custom business rules, look-up tables, and regular expressions that are not possible with the basic schema validation service.

The purpose of these services is to support data standards, checking data prior to submission to CDX. Because these are EN SOAP services, they can be easily invoked from applications that are web service ready and be integrated into automated data submission or processing systems. The services can also be accessed using a web browser. Users can send documents from their desktop and get results either synchronously or asynchronously. (For additional information refer to http://www.exchangenetwork.net/exchanges/air/nei_xml_val.pdf.)

The contractor shall provide support for these important shared web services hosted in CDX that are critical to both data quality and the proper functioning of many CDX EN data exchanges. Cloud-based monitors on performance elasticity and availability should be in place to maintain a high level of accessibility.

C.5.4.4 SUBTASK 4 – PROVIDE TECHNICAL FACILITATION AND CONSULTING SUPPORT

The CDX Program leads and participates in various technical meetings on a routine and as-needed basis. The contractor shall provide technical facilitation support to the CDX Program and to CDX customers.

C.5.4.5 SUBTASK 5 – PROVIDE ELEVATED SUPPORT SERVICES

Some CDX customers require elevated levels of support. This can be caused by a data exchange being categorized as a "critical" system or for other reasons.

The contractor shall provide elevated service levels to CDX systems. Examples of elevated service levels include, but are not limited to:

a. 24x7 technical support.
b. Continuity of operations.
c. Disaster recovery support.
d. Four to six hour vendor maintenance support for hardware/software.

C.5.4.6 SUBTASK 6 – PROVIDE SYSTEM PERFORMANCE MONITORING AND REPORTING

The performance monitoring that comes with the standard CDX O&M service is defined by the CDX QASP. Resource use and performance monitoring support also are performed to support for resource use cost recovery. This includes availability service monitoring by device, virtual device, and platform/service, as well as storage monitoring.

The contractor also shall provide systems performance monitoring and reporting services for CDX customers. This applies specifically to customers that desire performance reporting that is above the reporting that is normally provided as a part of the standard CDX O&M service. These requirements are defined at the project level and subproject level.

C.5.5 TASK 5 – PROVIDE CDX DEVELOPMENT LIFECYCLE SUPPORT

High level requirements will outline objectives and use of existing CDX services and will provide a general outline for any new infrastructure, services, customization of existing services, lifecycle methodology (Agile, Waterfall, or Spiral), and timeframe for deliverables. Solutions may be comprised of a variety of programming languages and technologies. (Refer to the CDX

Support Contract Technologies List, (Section J, Attachment S)). When requested by the FEDSIM CO, the contractor shall provide a Detailed Project Estimate in accordance with C.5.1.

The Development lifecycle process is the data exchange development for CDX web and the EN including the activities that define what it means to "take a flow" from conception with a program office to a fully deployed flow in production.

EPA CDX development conforms to an ITIL framework. As part of an ITIL continual process improvement, the contractor shall streamline and reduce costs for the lifecycle for data exchange development. The lifecycle process may involve one or both Agile and/or Waterfall/Spiral methodologies that include continual improvement:

a. Incorporation of standard services and techniques that enable rapid/low cost deployment of standard dataflows and exchanges that do not require a significant amount of customization.
b. Mature design, development gathering techniques, which may include project planning or pace-based planning through an Agile Sprint or Scrum methodology.
c. Use of pre-defined core service documentation and iterative development techniques.
d. Establishment of new documentation and development procedures for newly formed services.
e. Clearly defined meeting schedules with Integrated Project Teams (IPTs) or Scrum members.

The goal for using these standardized services and generic documentation is to minimize development costs for individual data exchanges.

Note: Typically, program requirements defined in terms of human interface tools and applications are described as data exchanges or portals with data exchanges that may have one or more reports with one or more role based functions that may utilize web service information exchange services. Program requirements that strictly involve server-to-server data transfer are referred to as data exchanges, which may interface with the EN service center and/or nodes.

The contractor shall provide the following development lifecycle support activities:

a. The contractor shall adhere to the Data Standard Lifecycle Process for design, development, test, and implementation of CDX data exchange projects.
b. The contractor shall ensure that all development efforts are compliant with the EPA's enterprise architecture. Documentation shall be provided with deliverables at each milestone in the process.
c. Depending on the particular functionality and the development methodology, the development lifecycle may include much or all of the following activities:

C.5.5.1 SUBTASK 1 – DOCUMENTATION OF SYSTEM REQUIREMENTS

The contractor shall hold teleconferences and other follow-up communications with the IESB project lead and the program office representative to document the system requirements in a Systems Requirements Specification (SRS), which can vary from user stories documented in a collaboration software to a full requirements document.

C.5.5.2 SUBTASK 2 – INTEGRATED PROJECT TEAM (IPT) PARTICIPATION

The contractor shall coordinate actively and responsively with the Government and other Government-designated contractors participating in the design, development, test, implementation, deployment, and operation of CDX. The contractor shall participate on the IPT throughout the entire project lifecycle to ensure efficient and quality development is delivered.

C.5.5.3 SUBTASK 3 – ESTABLISH COST AND SCHEDULE

Based on the requirements and approved SRS, the contractor shall prepare a Detailed Project Estimate that includes cost and schedule and submit it to FEDSIM COR and EPA CDX TPOC as outlined in Section C.5.1. If the Government and the contractor agree on cost and schedule, the project shall be executed under Labor CLIN X002 and associated Tools CLIN X004, Travel CLIN X003, and ODC CLIN X005 if necessary.

C.5.5.4 SUBTASK 4 – DEVELOP SYSTEM DESIGN

The contractor shall develop the System Design Document (SDD) (Section F.3, Deliverable 36) for the transmission of the data exchange through CDX. When possible, the contractor shall leverage generic design documentation. The design shall utilize existing services and reusable CDX components where possible (including Network Node Services, CDXNow, etc.); follow CDX and EN standards, guidance, business practices, and architecture; focus on maximum efficiency and cost effectiveness; and include features needed to ensure adequate system security. Typically, a System Architect and an EB provide final review of the design. The SDD can vary from user stories documented using a collaboration software to a full design document.

C.5.5.5 SUBTASK 5 – SECURITY PLANNING AND DOCUMENTATION

The contractor shall ensure the security of the CDX system and development environments. The contractor shall be responsible for maintaining security of all CDX supported systems in accordance with laws, regulations, policies, and procedures.

For new dataflow requirements, the contractor shall assess the impact of a customer's security requirements on the CDX infrastructure. The assessment could include:

a. Type of data.
b. System sensitivity.
c. System structure.
d. Data transmission.

The contractor is required to remain cognizant of new directions in Federal and/or EPA security posture including guidance, policies, procedures, and CDX technologies, and shall ensure that the detection of new threats and vulnerabilities to CDX are identified, addressed, and escalated according to the EPA Security Escalation Procedures, CSIRC, and Incident Response procedures (https://www.epa.gov/impoli8/procedures-facilitate-incident-response).

The contractor shall keep all security procedure and planning documents and other artifacts that are necessary to maintain the certification and accreditation of the CDX system and development environments current and accurate. The contractor shall prepare Systems Security Plans (SSP) (**Section F.3, Deliverable 32**) by working with EPA to ensure adequate security planning for the new and/or existing functionality and document the security measures for this functionality. The

contractor shall conduct vulnerability scans and provide technical expertise. The contractor shall document all firewall rules and manage firewall administration for Microsoft Azure Public Cloud while all other CDX firewall changes are managed by NCC. The contractor shall prepare Firewall Rule Change Requests (FRR) and submit them to the EPA. The contractor shall create and update Security Addendums (SA) and MOUs – ISA to the CDX system security plan. The contractor shall update the EPA system as necessary. For example, when security vulnerability is found in CDX, the CDX Program staff creates an entry in the EPA XACTA system and the contractor updates the entry into the EPA XACTA system.

The SSP for CDX addresses direct and inherited controls between the major application (CDX) and the general support system infrastructure. For the public cloud, the contractor manages security up to the switches (NCC manages the Wide Area Networks (WANs) and Local Area Networks (LANs)). Some public cloud network traffic is managed by NCC network equipment (Trusted Internet Connection (TIC)). For the private cloud, the contractor supports the entire stack. Security includes, but is not limited to:

a. Intrusion detection and protection systems.
b. Firewalls.
c. Hardware security.
d. Router.
e. Bridge.
f. Switches.

The contractor shall assess design, development and implementation of new and existing applications for CROMERR, and recommend and provide procedures, software, and documentation necessary for CDX electronic reporting to be CROMERR-compliant. The contractor shall support the CDX Program's efforts to implement or integrate CROMERR-approvable solutions in CDX system components and CDX services for CDX customers including programs and partners.

C.5.5.6 SUBTASK 6 – DESIGN READINESS REVIEW

Once requirements are known and security planning incorporates the necessary security measures into the overall system design, a brief design readiness review may be conducted before the functionality is built.

The contractor shall provide the following design readiness review support:

a. Conduct a readiness review after the design of the data exchange has been completed to ensure that it leverages core services and meets the requirements as described in the SRS.
b. Develop the functionality listed in the SRS and the SDD and modify existing code or deploy new code as required.
c. Present the results of developer testing to the Government and turn the developed functionality over to the testing team for formal unit/integration testing as needed by project.

C.5.5.7 SUBTASK 7 – UNIT/INTEGRATION TESTING

As the software is being developed, unit testing is conducted for certain functionality as it is built as a part of each sprint. The various parts of the software are then integrated and tested.

CDX web and EN software development is based on web platform software and web services involving multiple protocols for data exchange and authentication/authorization between systems and environments. When new applications or core functions are created (or platform/environment changes are made) software that utilizes web services and other protocol services between systems must be tested to ensure proper functioning. Software can typically be easily tested when it is constructed using standard core services for file exchange, login, or reduced sign-on. Integration tests may be performed using test input and/or test files and using the primary dashboard interfaces to perform reduced sign-on hyperlinks to other systems.

The contractor shall provide the following unit/integration testing support:

a. Conduct unit and end-to-end integration testing of the different components of the system in CDX as the data exchange development is completed.
b. Use test files of actual data that the program office will provide to the contractor.

C.5.5.8 SUBTASK 8 – TEST READINESS REVIEW

A test readiness review is conducted once the application has been developed to ensure the data exchange is ready for testing by stakeholders in CDX preproduction.

The contractor shall provide the following test readiness support:

a. Conduct unit/integration testing and document results as required by project.
b. Conduct readiness checklist review.

C.5.5.9 SUBTASK 9 – TESTING PLANS AND REPORTING SUPPORT

To maximize testing conducted by stakeholders, a test plan with test cases is developed to test the basic functionality. Any test results, observations, and system changes made to address those results are documented.

The contractor shall provide the following testing plans and reporting support:

a. Prepare a test plan with test cases to test the requirements identified for the specific data exchange/functionality **(Section F.3, Deliverable 29)**.
b. Prepare a test report that identifies what system changes the contractor completed during data exchange testing **(Section F.3, Deliverable 30)**.

C.5.5.10 SUBTASK 10 – USER ACCEPTANCE TESTING (UAT) SUPPORT

As the new functionality is being tested by stakeholders for UAT, the software will need to be deployed and fully operational during the UAT.

The contractor shall provide the following user acceptance testing support:

a. Provide support to user groups during testing to include ensuring the specific data exchange and system is fully operational in the CDX preproduction environment and monitor the system during this testing period.

C.5.5.11 SUBTASK 11 – CONFIGURATION MANAGEMENT SUPPORT

The responsibilities of this task are to maintain and manage software and hardware assets and provide change management expertise to support the baseline configuration of Government information systems. This task includes maintaining Cybersecurity Situational Awareness (SA), software and hardware assurance (tech refresh) management, software/hardware data analysis, prototype activities, and the enterprise architecture.

The contractor shall provide the following configuration management support:

a. Develop, implement, and maintain Configuration Management Plans.
b. Establish and update configuration baselines to meet evolving requirements, configurations, and products.
c. Identify configuration items and participate in configuration audits for maintaining proper accounting of configuration items.
d. Establish and implement change control processes that maintain traceability of configurations.
e. Participate in working groups and boards and provide configuration control status update briefings.
f. Develop and/or update configuration management database(s) and provide as needed.
g. Disseminate configuration management reports to relevant parties and stakeholders, which include CDX partners and IT Support Division Chief, Branch Chief, and Chief Information Officer (CIO) if needed.
h. Prepare evaluation certificates and assist with support documentation for accredited and unaccredited systems to ensure SSPs are current, including systems that are undergoing ATO evaluation.
i. Archive all distributed reports and evaluation materials, maintain records of evaluation activities, and generate statistics tailored to management requirements to support the decision-making process.
j. Assist with resolving discrepancies in EPA CDX property accountability.
k. Use the configuration processes and procedures described in Configuration Management Plan (**Section F.3, Deliverable 24**) and Change Control and utilize configuration management implementation processes and procedures for deployment in moving from development to test to production.

C.5.5.12 SUBTASK 12 – PRODUCTION READINESS REVIEW SUPPORT

After testing is completed, a production readiness review is conducted to make sure that necessary system changes and activities have been completed to successfully deploy the software in production.

The contractor shall provide the following production readiness review support:

a. Conduct a readiness review to ensure the system is ready for deployment to production. Upon conclusion of system testing, determine if required system changes that were identified during testing were made.
b. Complete all readiness checklists during the readiness review and resolve any outstanding issues identified during the readiness review.

C.5.5.13 SUBTASK 13 – SOFTWARE IMPLEMENTATION SUPPORT

When implementing the new software in the production environment, the software being promoted from the test and pre-production environments is identified and documented. The software is promoted for the key functionality, and changes are made to ensure the software is functioning as expected in production

The contractor shall provide the following implementation support:

a. Ensure the successful implementation of the software without impacting other parts of CDX.
b. Update and revise software release notes one time for any contractor-developed software.
c. Update any notes to reflect the final version of the software that is moved out of the development and preproduction environments and deployed to the production environment.

C.5.5.14 SUBTASK 14 – PREPARATION SUPPORT OF THE O&M GUIDE

As the new functionality/software moves from development to O&M, an O&M guide is prepared for the operations team to understand what is needed for O&M for that data exchange.

The contractor shall provide the following O&M guide preparation support:

a. Prepare Draft Data Exchange O&M Guide, (**Section F.3, Deliverable 33**).
b. Prepare Final Data Exchange O&M Guide, **(Section F.3, Deliverable 34)**.
c. Ensure that the operation staff provides input during the readiness review.
d. Serve as a knowledge base for CDX customers by providing procedural and technical guidance on standards previously approved by the CDX EB.

C.5.5.15 SUBTASK 15 – TRAINING (OPTIONAL)

The contractor may be required to prepare and deliver training for end users of CDX data exchanges as needed. The contractor will prepare a Training Plan that defines the approach to training and shall include a detailed schedule. Training Materials (**Section F.3, Deliverable 28**) may be delivered using one or more of the following training methods:

a. Training Manuals (electronic) available for download for participants and trainers.
b. Web-based training: text tutorials.
c. Web-based training: video tutorials.
d. Live web conference training sessions.
e. In person, onsite training sessions.

The contractor shall conduct post-training surveys and assessments and provide the results to the CDX team (**Section F.3, Deliverable 28**). This task will also apply to Task 6 as needed.

C.5.5.16 SUBTASK 16 – GEOSPATIAL SERVICES (OPTIONAL)

Geospatial data are those data that are place based, including locational, geographical and associated place-based attributes that facilitate the use of these data in a geographic context. Typically they are described as points, lines, polygon “vectors” or digital images known as

"rasters." These data are exchanged through widely used proprietary formats and services or increasingly through the use of Geographic Markup Language (GML) and Geospatial Really Simple Stuff (GeoRSS). Geospatial data tend to be complex, and because of this, they are typically accessed, analyzed and managed through Geographic Information Systems (GIS) technologies for mapping, modeling or routing purposes. Geospatial Services include the functions and technologies associated with the storage, search, discovery, access and exchange of geospatial data.

Over the last decade, there has been a virtual explosion in the interest and capabilities to integrate environmental data to a spatial context. Some examples of past support include:

a. **Facility Registry System Update Service (FRS US)**

   In this service, FRS data are presented to a regulated entity or other register users through a web-based visualization/mapping service and the user is allowed to submit edits to that location using the mapping interface. By offering this service, EPA is able to collect more accurate locational data simply and effectively.

b. **GeoFinder Exchange Network Project**

   Geospatial analysis depends on rapidly gathering and integrating widely disparate locational information and presenting this on a map. One of the major obstacles to the geospatial community has been the shortcoming of existing search engines to crawl for geospatial data and metadata. The GeoFinder project leverages CDX security (NAAS) to search geospatial metadata catalogues across agencies.

c. **Heartland Emergency Response Exchange Geospatial Services**

   These services are critical during emergency responses, where responders need rapid access to widely-diverse state, local and federal data to make "on the ground" decisions. CDX has helped support an Exchange Network project to tie Exchange Network data exchanges to visualization capabilities like Google Earth.

   With rare exception, EPA's programs, regions and research operations use geospatial data, but geospatial technologies for analyzing these data aren't used widely. Over the next decade this is going to change, to the point that geospatial data services could become a central focus of CDX

   For the purposes of this contract, geospatial services include:

   a. Business Support Services
   b. Primary and Additional Development Services
   c. Primary and Additional Operations and Maintenance Services

   In the development of geospatial services, the Contractor should take advantage of the use of Open Geospatial Information System Consortium (OGC) standards (http://www.opengeospatial.org/ for search, exchange and publishing of geospatial data. The Contractor should also take full advantage of existing federal (https://www.geoplatform.gov/) and EPA (https://www.epa.gov/geospatial) infrastructure, policies and standards for geospatial data and metadata.

   The contractor may be required to:

   a. Develop geospatial services can be easily integrated and/or interoperate with CDX data exchanges or exchanges

b. Integrate geospatial services to CDX data exchanges or exchanges
c. Maintain geospatial services integrated to CDX data exchanges or exchanges

These services shall also be available under Task 6 as needed.

C.5.6 TASK 6 – CDX DEVELOPMENT SERVICES

A number of services are being developed for CDX to support stakeholders. CDX stakeholder solutions may be comprised of a variety of programming languages and technologies. Please refer to the CDX Support Contract Technologies List (Section J, Attachment S). When requested by the FEDSIM CO, the contractor shall provide a Detailed Project Estimates (Section J, Attachment AG) in accordance with Section C.5.1.

In accordance with the data standard lifecycle process and in compliance with the EPA enterprise architecture, the contractor shall provide development services listed below in the following subtasks:

C.5.6.1 SUBTASK 1– NODE DEVELOPMENT AND DEPLOYMENT ASSISTANCE

EPA's CDX, a cornerstone of the agency's enterprise architecture, and the EN, is built on an SOA. The key infrastructure components are called shared services. All major components in CDX are service enabled.

The NAAS are a set of web services that handle the security for CDX, the EN, and now the E-Enterprise with the addition of the Identity Federation Bridge. It is based on a SQLDATA SOAP server engine. It supports multiple authentication types from User ID password to certificates and PIV. See documentation at ExchangeNetwork.net.

Shared services also include QA for XML documents and virus scans. This architecture is being used to support and integrate CDX with agency SOA initiatives as well as the Identity and Access Management (IAM) services.

Information sharing and data publishing via network services is a primary goal of the network and the OEI's Information Access Initiative.

CDX and the EN data exchanges utilize many of these services to exchange data and messages among network trading partners that are based on a common specification for reusable software components known as Network Nodes.

Network Nodes are developed as open source, proprietary and virtual software by trading partners on the network. The behavior of Network Nodes is defined in the Network Node Functional Specification. Most EN trading partners have upgraded their nodes from the initial Node 1.1 to the current Node 2.0 specifications. CDX currently supports both versions of the node in order to support state and internal EPA office nodes transition efforts.

CDX maintains nodes running in the Microsoft Azure cloud (VES), on JBOSS (Node 2.0), on .NET (Node 2.0), and SQLDATA Soap server (Node 1.1 - 2.0 - NAAs and QA services). In addition, a .NET /Windows Workflow Foundation-based node is being used for many of the data exchanges. Listed below are the main types of nodes provided to trading partners:

a. Full Nodes can both request data from the network, as well as publish data to the network in response to requests (e.g., a query or solicit) from other Network Nodes. Full nodes can potentially leverage the full capabilities of the network for machine-to-machine

interaction by sending requests for data and publishing data for use by other network partners.

b. Node/Network clients or "Network Desktops" can submit, request, and receive results from a request to a full node, but they cannot listen for/respond to queries from other nodes and as such cannot publish data on the network. These clients are primarily for human-to-machine interaction and are normally used by trading partners that do not publish to the network. They are used to integrate network services into applications as well.

c. Software Developer Kits are also available to integrate network services into applications. It simplifies network access down to a few lines of script that can be inserted into any application.

The VES are a cloud-based, multi-tenant platform for creating data exchanges on the EN with the same functionality as a full node. It is the new EN standard for partners to implement nodes. The VES eliminates the need for partners to create and maintain a node server. The VES supports all of the functions of a node and simplifies the creation of data exchanges. It also supports a new communication model to simplify connectivity (i.e., the internet services bus). The VES Administrator is a web interface used to configure data exchanges. New data exchanges are created and data is published by simply filling out forms, with no coding required. Data exchanges can be imported from a shared version that fills out the forms, allowing partners to concentrate on mapping data to their staging tables. In addition to cost savings, the Virtual Node provides partners with the ability to rapidly publish data in a discoverable and standardized fashion. For more information see the following: http://www.exchangenetwork.net/virtual-exchange-service.

The Next Generation Node (NGN) is a full node implementation in JAVA that contains all of the software components that are required to host an EN node from messaging to transaction management and auditing. EPA provides open source nodes, both Java and .Net Versions, to trading partners. The JAVA version, called the NGN, is supported for a variety of application server platforms including JBoss, Oracle, Websphere, Tomcat, and BEA Weblogic. EPA's Network Nodes allow integration of a variety of other services and applications. For example, the current NGN includes integration of an open source velocity mapper that can be used by trading partners to map to their database to create XML files for exchanges or as publishing services. EPA assists trading partners and EPA Program Offices in deploying these nodes. Support for these applications is handled through the Node and CDX Help Desks.

The contractor shall ensure the further development of the Network Nodes and node clients, assist EPA program offices and trading partners in deploying nodes when necessary, and be able to support partner node development on the VES as necessary.

The contractor shall support development activities to support the CDX Node and EN data exchanges that include, but are not limited to:

a. Leverage existing tools and services wherever possible.

b. Provide standard development and lifecycle management of each CDX and EN data exchange.

c. Facilitate more rapid and lower cost dataflow deployment through the use of the VES configuration driven service development and the use of streamlined development tools and procedures if possible.
d. Improve existing NGN functionality by leveraging services and other reusable components (e.g., NAAS, IAM, QA, Standard Audit, Logging, and Workflow monitoring).
e. Evaluate and develop new methods, tools and procedures to simplify data exchange creation, new services, and data publishing to reduce cost and time to market.
f. Port data exchanges from node 1.1 to node 2.0 in support of partner upgrades.
g. Integrate with other agency SOA components.
h. Standardize common data exchange patterns such that they can be readily reused on the development of subsequent NGN data exchanges, in order to reduce costs for future NGN data exchanges. The types of reusable activities include (e.g., integrate solicit into generic NGN data exchange to provide application support for launching publishing services (i.e., velocity mapper, transforming results, and providing results to the service requester).

C.5.6.1.1 HELP DESK SUPPORT FOR NODE AND IT SERVICE DESK

There are two main help desk functions: (1) the Node Help Desk which helps with nodes and node-related accounts for exchanges and (2) the CDX IT Service Desk which provides Tier 3 technical support to CDX IT services beyond just that of the node help desk. The contractor shall provide the following Tier 3 Help Desk Support for the Node Help Desk and CDX IT Service Desk support:

a. Conduct all technical and administrative duties of the U.S. EPA Node and CDX IT Service Desk for the fulfillment of IT support requests.
b. Conduct IT new employee orientation and account briefing.
c. Assist in the operation of the CDX and Node IT Service Desk by participating in answering IT Service Desk phone calls during standard business hours (8:00 a.m. - 5:00 p.m. Eastern Standard Time), ensuring every call is answered, and providing assistance with customer phone calls and/or emails.
d. Configure, troubleshoot, and maintain all hardware/software required to keep the CDX and Node IT operational and secure in accordance with applicable policies.
e. Document all jobs/tasks in the IT Service Desk management system that captures, at the minimum, the following:
    1. Date job/task was opened and closed.
    2. Client contact information.
    3. Detailed description of job/task.
    4. Severity level of job/task (a priority rating that is only required for security tickets).
    5. Number of hours to complete job/task.
    6. Proposed start/end time of job/tasks (priority).
    7. Support actions taken to resolve job/task.
    8. Escalation actions taken to resolve job/task.
    9. Final resolution for job/task.

f. Provide and report monthly performance metrics for Service Desk resolutions to include number of daily calls, number of abandoned calls, number of daily tickets submitted, response time, resolution time, nature of trouble ticket or call metrics, and how many are repeat calls or tickets. A sample Node report is attached for reference, Section J, Attachment AD.
g. Provide user support to include, but not limited to, the following functions: trouble ticket management, systems outage notification and management, mission approvals, and systems access.
h. Receive and process approved requests for the creation, disabling, changing, and deletion of local computer user accounts.
i. Assist IT customers with establishing, changing, and resetting network and local system passwords.
j. Provide users with the appropriate permissions to enable access to approved network and/or local resources.
k. Ensure that user accounts are maintained and managed in accordance with EPA CDX policies.
l. Provide virtual, one-on-one IT assistance as necessary to ensure customer problem resolution.
m. Adhere to the QCP (Section C.5.2.8) to ensure adherence to the required standards and capture levels of customer satisfaction.
n. Provide notification of disruption of services to appropriate CDX personnel in accordance with EPA CDX policies and procedures.
o. Continuously monitor delivery channel efficiency and coordinate extensively with the Frequently Asked Questions (FAQs) concerning all open, pending, and closed tickets.
p. Provide a listing of the types of issues and FAQs expected to be resolved on first contact.
q. Develop and update a comprehensive knowledge base that can be accessed by Service Desk staff members and the Government.

The contractor shall provide a Service Desk Plan - Draft (**Section F.3, Deliverable 25)** based on its technical approach presented in its technical proposal, as appropriate. The contractor shall provide a Service Desk Plan – Final **(Section F.3, Deliverable 26)** with Government feedback incorporated. The contractor shall conduct an annual review of the Service Desk Plan with the Government as required (**Section F.3, Deliverable 27**). The Service Desk Plan shall include, as a minimum, the following:

a. Procedures for handling after-hour calls.
b. Contractor-developed SOPs for complaint management (intake and investigation) and general inquiries.
c. Templates and scripts to ensure consistent responses to customers.
d. Customer request analysis process to seek common solutions to similar requests.
e. Content management processes to ensure appropriate communication.
f. Processes used to improve customer service and experience.

C.5.6.2 SUBTASK 2 – NODE DEPLOYMENT ASSISTANCE

The contractor shall assist EPA and other trading partners as requested in installing, configuring, and using Nodes for their data exchanges including:

a. Meeting with program office support teams to provide current information on the EN, agency SOA initiatives, CDX standard services and processes, and consult on requirements, architecture, and design in support of the other support team's data exchange.
b. Reviewing available documentation, (e.g., process/architecture diagrams, requirements, design) to ensure that the solutions proposed by the internal developers/operations teams are consistent with CDX's and EN business practices and architecture. The contractor's input and comments shall recommend making best use of reusable CDX components; identify specific CDX and EN standards and guidance items that are not, but should be, used in these documents; and identify requirements and design features needed to ensure adequate system security.
c. Assisting the State or EPA office in installing and demonstrating potential software solutions for network data exchanges that may include coordination with other support teams by providing code, installing, and running these potential solutions in the data exchange environment(s).
d. Coordinating across internal development teams to ensure all teams are kept up to date on changes in software, procedures, environments, and services.
e. Reviewing existing CDX Node and EN Node implementations in order to identify critical issues. The contractor shall also identify and review relevant emerging and new technologies in Web Services, SOA, and business process management.
f. As agreed upon by the Government, the contractor shall prototype and evaluate new products, and make recommendations for improving the overall efficiency and maintainability of CDX and the EN.

For more information on Nodes and Node Clients see http://www.exchangenetwork.net/map-nodes/.

C.5.6.3 SUBTASK 3 – DATA PUBLISHING

CDX defines Data Publishing as a framework of web services that make data available for consumption by end users from EPA data stores through the EN. Network partners are encouraged to publish data to make it more widely available. EPA and CDX are making a concerted effort to make data available through data publishing services. The VES and other EN nodes support REST Application Programming Interfaces (APIs) based on an EN standard. These REST services are useful for publishing and are automatically created each time a SOAP query is defined. Many new agency APIs are now being created using REST and the 18F REST standard. REST services are based on the EN REST guidance.

The contractor shall:

a. Develop and maintain web services that operate through the CDX Node and make data available to end users and consumers. Publishing services shall include those that operate on a push model, such as in the TRI state data exchange, and a pull model, such as Facility Registry System (FRS). Push model services include web services such as

submit. Examples of pull model services include query and solicit. Services shall be fully compliant with the EN specifications and protocols (see EN Functional Specification).

b. Develop monitoring capabilities that will allow EPA to track data publishing transactions, including the success or failure of that transaction.
c. Develop, maintain, and update, as necessary, all documentation detailing publishing services.

C.5.6.4 SUBTASK 4 – WEB DEVELOPMENT SERVICES

In 2016 CDX received more than 131 million web hits as stakeholders conducted agency business through more than 100 CDX Programs. OEI provides standard web interfaces and core reusable service solutions, including Registration, electronic signature and/or encrypted submissions, copy of record transaction history, and regulated repudiation. These service solutions support a significant portion of these user submissions and integrate with other data exchanges between EPA and external entities. Where possible services are generalized to support reusable components through multiple IT platforms and designed to be published to open source platforms such as GitHub, Bamboo, and Maven.

The contractor shall support development and operations activities to support the web-based core services solutions and components of CDX to include the following:

a. Conducting functional, technical, and user requirements.
b. Designing and developing web-based data exchanges in accordance with all applicable Federal and EPA laws, regulations, policies, and procedures.
c. Conducting multiple levels of testing and assisting EPA program offices in the testing process.
d. Conducting production readiness reviews.
e. Deploying web data exchanges.

C.5.6.4.1 WEB APPLICATION DEVELOPMENT

CDX hosts CDX Web, Shared CROMERR Services, and E-Enterprise services directly or indirectly supporting approximately 70 web applications supporting over 100 forms on a variety of platforms that interface with web forms and other systems and services. The purpose of these applications is to support the efficient and accurate electronic submission and exchange of data between the public and EPA, and to support exchanges between the regulated public and States, Tribes, Territories, and Local government. Development technologies minimally include: J2EE, ASP.NET, Oracle, and SQLServer with a significant focus on cryptography.

The contractor shall:

a. Support web application development activities that interact with CDX forms and standardized services and solutions according to development lifecycle procedures. This may include conducting functional, technical, and user requirements specifications; designing and developing applications in accordance with all applicable Federal and EPA laws, regulations, policies and procedures; conducting multiple levels of testing and assisting EPA program offices in the testing process; conducting production readiness reviews and deploying applications; and making post-production enhancements/bug fixes as part of a data exchange or related project.

b. Provide consulting services to programs that elect to build components of a web-based data exchange application that will be hosted on CDX. The contractor should serve as a knowledgebase for program customers and their contractors to provide procedural and technical guidance and standards previously approved by the CDX EB.

C.5.6.4.2 WEB FORM DEVELOPMENT

CDX contains multiple web interfaces for users to submit and exchange data with EPA, many of which are web forms. As of March 2016, CDX supported web forms for about 70 different EPA programs. In the past, OEI had an average increase of five to 15 new programs a year. Based on new requirements and additional programs serviced by EPA, these web forms require changes or new forms be built to support additional programs. In addition, the core CDX infrastructure includes forms associated with user registration, administration, and provisioning.

The contractor shall provide the following web form development support:

Support web form development activities that interact with other CDX standard IT services. This may include conducting functional, technical, and user requirements; designing and developing web forms that interact with standard web services in accordance with all applicable Federal and EPA laws, regulations, policies and procedures; conducting multiple levels of testing and assisting EPA program offices in the testing process; conducting production readiness reviews and deploying forms; and making post-production enhancements/bug fixes as part of a data exchange or related project.

C.5.6.4.3 CDXNOW SERVICES DEVELOPMENT

CDX Web and Shared CROMERR are core software-as-a-service offerings comprised of several well-defined web form and web service based services with repeatable lifecycles and predictable costs for performing standardized IT services commonly used to consistently manage the complexity of help desk administration, user registration, regulated reporting, and copy of record management with minimal additional regulatory review. CDXNOW services include, but are not limited to:

a. LexisNexis InstantID – Identity Proofing Web Services (CDX and Shared CROMERR).
b. LexisNexis InstantVerify/InstantAccess also known as “Out of Wallet” (CDX).
c. ProvisionNOW to quickly set up role registration based on requirements.
d. SubmitNOW to quickly produce web form submit functions that electronically sign/certify documents.
e. PrepareNOW to quickly produce web form SubmitNOW w/o signatures and optionally attach files.
f. ExchangeNOW to quickly share files extranet between two roles.
g. RapidCDX-Form to quickly convert forms to document(s) (PDF/HTML).
h. XML/Stylesheets to support standard conversion of forms to XML/stylesheet document(s) to be retained with documents.
i. Form Extract (CSV) to convert standard form input to comma separated value format.
j. CDX InBox which is a standard https mail service available to all users of CDX Web and advanced shared CROMERR tools.

k. Group InBox which is a shared secure https CDX InBox available as a mailbox on CDX Web extranet.
l. VersiformNOW to quickly produce PrepareNOW from VERSIFORM Cloud and optionally attach files or certify forms using standard web services and CROMERR electronic signature options.
m. Remote SubmitNOW for external systems (SOAP WS).
n. ReviewNOW a search, list, and download submitted files for entire roles.
o. Encrypted ReviewNOW with encryption at rest/decryption support.
p. UserNOW with three registration requests.
q. CROMERR Checklist Package.
r. CROMERR Tier 1 a streamlined reuse of CDX Standard CROMERR Checklist Package.
s. Role Sponsorship which includes role provisioning with one role sponsoring another and optional signature(s).
t. ADC Meeting Coordination with standard integration meetings to coordinate with the NCC for ADC assistance.

The contractor shall provide the following support for CDXNOW activities:

a. Provide technical support to develop, maintain, and integrate new CDX Services into CDXNOW.
b. Provide support for CDX customers that want to establish CDXNOW data exchanges. Support shall include the following:
    1. CDXNOW requirements input
    2. Provisioning
    3. Customization
    4. Functional Testing
    5. Integration Testing
    6. Design
    7. Submission
    8. Review
    9. Test
    10. Publication
    11. Operational Maintenance (Refer to C.5.3)
c. Ensure CDXNOW data exchanges and services are designed, developed, and maintained in accordance with:
    1. CDX development lifecycle procedures.
    2. CDX O&M and DevOps procedures.
    3. CROMERR when applicable to that specific data exchange.

C.5.6.4.4 SHARED SERVICES

The contractor shall support Shared Services and assist Shared Service developers in deploying enhanced services, as necessary. These services can be in the form of either standard SOAP or REST APIs, as required.

The contractor shall support O&M activities (C.5.3) for the Shared Services that include, but are not limited to:

a. Deploying new service releases (e.g., server setup and configuration, node setup, unit testing, rolling between DEVTEST PROD environments, and QOS monitoring).
b. Communicating/releasing new versions of shared service software to the EN.
c. Periodic testing.
d. Identify, test interoperability, and deploy new versions of supported software to remain current and to ensure adequate support. Routine maintenance activities are described under O&M services task.
e. Provide last tier operational support for Shared Services including the ENDS, the EN Service Center, the NAAS, the E-Enterprise Identity Federation Bridge, and the QA, XML Key Management, Virus Scan Service, Certificate Authority.
f. Support issues associated with other application integration, schema and Schematron deployments as they are necessary, and assist in the redeployment of these services into the hybrid cloud environment if the migration is not complete.
g. Develop, maintain, and update, as necessary, all documentation detailing EN shared services.

C.5.6.5 SUBTASK 5 –DATA PROCESSING CENTER (DPC)/REPORTING CENTERS (RC) SUPPORT

DPC/RCs receive, process, record, store, and distribute print and other electronic media.

The contractor shall be responsible for:

a. Configuring, installing, and maintaining data entry and processing systems and all associated modules and equipment in optimal working condition.
b. Following hardware and system operations procedure guidelines as stated in various EPA documents.
c. Maintaining any DPC/RC related systems at an optimal working condition during normal business hours (8:00 a.m. - 5:00 p.m. Eastern Standard Time) on all normal business days unless otherwise directed by EPA. The Government considers optimal working conditions as ones that do not impede or stop data entry or production processing during 99 percent of normal business hours.
d. Downtime resulting from specific technical directions from EPA for the halting of data processing and data management activities shall be excluded.
e. Receive the current documentation from EPA on the required Standard Operating Procedures (SOPs) for each of the programs that operate a DPC/RC and shall follow those procedures, as directed.
f. Suggest enhancements to the procedures but shall not implement them unless directed by EPA.

g. Maintain and update all procedure documentation.
h. Provide comprehensive systems lifecycle services for all software application systems in the DPC/RC and ensure that all system-related products produced under this order have adequate documentation.
i. Refer to the Data System Development and System Lifecycle Maintenance section of this SOW for information regarding EPA system lifecycle requirements.
j. Ensure that the contractor maintains a high degree of interaction between the contractor's technical staff and the contractor's project managers while performing these services.
k. Provide design recommendations as well as ideas for the development and implementation of major enhancements.
l. Include suggestions for where existing development, systems, or processes can be leveraged or adapted to maximize cost savings, where feasible, to the Government
m. Identify innovative technologies that exploit web capabilities to streamline the collection and dissemination of environmental information to stakeholders.
n. Identify mechanisms to publish data in appropriate formats to address the analysis in response to stakeholder queries.
o. Inventory, manage, and maintain all property required for the operations of the DPC/RC including items such as computers, furniture, and office supplies.

C.5.6.5.1 SUBMISSION RECEIPT AND IDENTIFICATION

The contractor shall:

a. Receive, identify, process, and track all submissions to the DPC/RC. The contractor will receive submissions via a Post Office Box, as regular mail, or commercial express mail, and fax transmissions.
b. Receive and process (e.g., date stamp and identify document type) all mail addressed to the DPC/RC.
c. Pick-up and deliver documents to EPA.
d. Open, date stamp (with the date of receipt at the EPA RC), and process all "official" incoming mail.
e. Maintain processing procedures that include document identification, document labeling (i.e., bar coding), placing materials (whether forms, disks, or other communications) in folders, recording postmark and received dates per received package, and entering the information into the Records Management System.
f. Assist EPA, as required, in the distribution of EPA mailings through the DPC/RC.
g. Assist with electronic print correspondence with end users, including e-mailing responses to requests.
h. Perform the entry of data from paper/magnetic/optical media into repository databases.
i. Support data capture, identification, verification, reconciliation, and validation.
j. Maintain responsibility for handling and acknowledging Claims of Trade Secrecy (Trade Secret documents) under Emergency Planning and Community Right-to-Know Act (EPCRA) Section 313.

C.5.6.5.2 END USER SUPPORT AND TROUBLESHOOTING

The contractor shall:

a. Provide user and technical support services as defined and prioritized by the EPA to the user community by answering questions, responding to requests for documentation, and providing required help.
b. Respond to requests for assistance directly from users, or EPA may refer them to the contractor.
c. Respond to all inquiries within one business day. The contractor shall notify users who leave messages that it is EPA's goal to respond to their inquiry within one business day.
d. Develop standard form answers for hotline and e-mail questions.
e. Provide standard automation for Event and Incident Escalation Support operational procedures with help desks through standard Operational Framework agreements.

C.5.6.6 RESERVED

C.5.6.7 SUBTASK 7 – DEDICATED HARDWARE AND SOFTWARE

CDX stakeholders may require specialized hardware and software be supported due to unique needs or to reduce risk in the primary CDX system environment. This is an exception to the normal practice. Based on the requirements of CDX stakeholder data exchanges, the contractor shall provide the following support to dedicated hardware and software:

a. Analyze the various facets of a dedicated environment construct.
b. Analyze the impact of supporting a dedicated environment for a specific customer which could include custom or dedicated:
    1. Hardware
    2. Operating system
    3. Custom application
    4. Physical environment
    5. Public Cloud Services
c. Clearly delineate CDX infrastructure from the program specific dedicated environment and document these components.
d. Build out these environments as directed by EPA.
e. Maintain these environments in accordance with EPA and program established practices and documented policies. Resource inventory and utilization will be continually monitored and maintained to identity stakeholder use and to ensure adequate availability.

C.5.6.8 SUBTASK 8 – PROVIDE SYSTEM ENGINEERING SUPPORT

CDX System Engineering activities are coordinated through the CDX EB and all activities are approved and managed by the chair of the EB.

The contractor shall provide system engineering support to include the following support areas: LANs, WANs, Virtual Private Networks (VPNs), routers, firewalls, network protocols, security

and network operations and monitoring solutions, vulnerability analysis, PKI, data encryption, key management, data warehousing, and data mining capabilities to perform this task.

The contractor shall provide the following system engineering support:

a. Engineer CDX information systems such as requirements management and workflow management systems, and obtain appropriate Government approval prior to implementing new technical information systems solutions (both physical and virtual).
b. Conduct joint architectural/systems engineering analyses to validate that proposed designs can be fully integrated with existing, projected, and target Information System (IS) enterprise architectures, and that they facilitate effective communications and authorized exchanges of information, and develop Analysis and Recommendation Reports (**Section F.3, Deliverable 22**).
c. Assist with the development and review of strategies, plans, and activities to integrate capabilities into an operational platform.
d. Develop concepts of operation and system documents for new secure, remote, backup storage systems to improve the resiliency of the enterprise architecture for different disaster recovery scenarios.
e. Develop methods and procedures to transfer and replicate data over long distances and to protect data from being manipulated or distorted.
f. Integrate and maintain electronic processes or methodologies to automate the collection, reporting, and resolution of issues process to resolve total system problems or technology problems.
g. Apply system engineering principles for reviewing and analyzing secure systems designs, identifying areas for improvement, developing solutions for resolving secure systems design problems, and developing Analysis and Recommendation Reports (**Section F.3, Deliverable 22**).
h. Coordinate and collaborate with the requirements team and perform technical planning, system integration, verification and validation, risk analysis, and supportability and effectiveness analyses for total systems solutions.
i. Perform analyses at all levels of total system product lifecycle, including hardware/software, concept, design, fabrication, test, installation, operation, maintenance, and disposal.
j. Perform site surveys, system evaluation, system analysis, architecture, and infrastructure assessments.
k. Conduct logical and systematic conversions of customer or product requirements into total systems solutions that acknowledge technical, schedule, and cost constraints.
l. Apply and/or develop advanced technologies, scientific principles, theories, and concepts.
m. Plan new programs and recommend technological application programs to accomplish long-range objectives.
n. Conduct review of, and provide comments on, technical materials consisting of, but not limited to, technical documentation and reports.

o. Assist with data collection and analysis, at a minimum, for CDX presentations, speeches, briefings, and maintain quarterly, monthly, and annual metrics on leading security indicators, as required.
p. Review input from various organizations, assemble the information into a consolidated package, and submit it for review for inclusion into various recurring, and by demand, reports.
q. Analyze the security details of systems and assist with developing and publishing security processes and producing official records from formal meetings of every category.
r. Attend and provide general support for the weekly EB activities and other relevant groups.
s. Identify and track high-level data exchange development project milestones.
t. Support consistent application of CDX engineering standards across CDX.
u. Present new technologies and program system designs that could be applicable for CDX.
v. Support CDX research activities by reviewing emerging technologies in order to determine suitability for future use on CDX. This research will generally involve special investigations and presentations to the CDX EB.

C.5.6.9 SUBTASK 9 – OUTREACH, COMMUNICATION, AND GOVERNANCE SUPPORT

The CDX Team requires outreach and communications support to the CDX stakeholder community.

The contractor shall:

a. Prepare materials for internal and public consumption and those materials could be in the form of paper, web-based, or other form and include items such as white papers (**Section F.3, Deliverable 21**).
b. Provide support to CDX governing bodies that address CDX-related issues to include preparing agendas, meetings notes, and action items.

C.5.6.10 SUBTASK 10 – ENHANCED FINANCIAL REPORTING SUPPORT

This support shall be provided under C.5.2.11.

C.5.6.11 SUBTASK 11 – PROVIDE EVM METRICS AND CALCULATIONS SUPPORT (OPTIONAL)

EVM support is recommended for development efforts exceeding five hundred thousand dollars, but left to the discretion of the CDX customer. When necessary the contractor shall support and provide necessary metrics and calculations which may include:

a. Use EVM methods to support a specific data exchange effort.
b. Consult and collaborate with EPA in developing the methods during the Base Period that are intended to support discrete Option Period measures of earned value and report monthly on the values of metrics collected.

c. Use an EVM methods to provide the following project status data on a monthly basis as part of the monthly status report (all metrics are project-to-date cumulative values unless otherwise stated):
    1. Measurement Data to include: Budget Cost of Work Scheduled (BCWS), Budget Cost of Work Scheduled Currency (BCWScurr), Budget Cost of Work Performed (BCWP), Budget Cost of Work Performed Currency (BCWPcurr), and Cost/Curve Graph.
    2. Variance Data to include: Cost Variance (CV) and Schedule Variance (SV).
    3. Performance Index Data to include: Cost Performance Index (CPI) and Schedule Performance Index (SPI).
    4. Variance Percentage Indicators to include: Cost Variance Percentage (CV%) and Schedule Variance Percentage (SV%).
    5. Estimates At Completion and Completion Variances to include: EAC1, EAC2, EACPM, VAC1, and VAC2.
d. Report the above EVM metrics in a table containing a column for each of the six most recent months' values and one row per metric.
e. Include an analysis of significant EVM method variances on a monthly basis as part of the monthly status report, as requested.

Support and participate in integrated baseline reviews and reviews of all relevant EVM data as requested by EPA customers.

C.5.6.12 SUBTASK 12 – TRAINING (OPTIONAL

The contractor shall prepare and deliver training as described in C.5 for end users of CDX data exchanges as needed.

C.5.6.13 SUBTASK 13 – GEOSPATIAL SERVICES (OPTIONAL)

Geospatial Services shall be available as described in C.5 as needed.